

## **Consultation on Energy Future System Operator**

### **RenewableUK response**

27 September 2021

#### ***About RenewableUK***

RenewableUK's members are building our future energy system, powered by clean electricity. We bring them together to deliver that future faster; a future which is better for industry, billpayers, and the environment. We support over 400 member companies to ensure increasing amounts of renewable electricity are deployed across the UK and to access export markets all over the world. Our members are business leaders, technology innovators, and expert thinkers from right across industry.

#### **Introductory remarks**

RenewableUK and our members welcome the opportunity to respond to the Energy Future System Operator consultation. This response is the first step in working with BEIS and Ofgem to shape the UK's institutional architecture in a way that speeds our transition towards net zero.

#### **Part 1 – case for change**

##### **Question 1: Do you agree that net zero will create the need for new technical roles in the electricity and gas systems, and require a new approach to energy system governance?**

Yes, we believe that the energy transition will require the current electricity and gas systems to evolve to become increasingly more integrated and more electrified. We think that as we move to net zero a new approach to energy market development and network planning must be taken to fulfil the complexity that a more flexible and renewable-based energy system will bring to the network.

##### **Question 2: Do you agree that the establishment of a Future System Operator is needed to fulfil the kinds of technical roles needed to drive net zero?**

Yes, we think that a new entity is needed to fulfil the kind of technical roles that are needed to drive net zero. Today, we can see that Ofgem often makes decisions that are inconsistent with securing the government's policy outcomes. The Government is advocating for net zero, which will require the development of an energy system with more localised and decentralised generation assets; however, the regulator keeps implementing policies that are a barrier to this.

We believe that a Future System Operator (FSO) could act as an independent entity that could provide targeted advice to Ofgem and BEIS, based on its expertise on the impact of different

potential decisions on the energy system. Today, it is necessary that behind any policy decision-making, holistic analyses are carried out, which must include the complexity of all the interconnected variables that a flexible and renewable-based energy system requires. Therefore, we think that an FSO will fill the missing piece to drive progress towards net zero while maintaining energy security and minimising costs for consumers. It is important to note that capacity building is very important, and an FSO would need to ensure it is properly staffed with the right skills and expertise to deliver this, which may take time.

**Question 3: Do you agree that a Future System Operator should have roles in both the electricity and gas systems?**

Yes, we believe that a FSO with roles in both the electricity and gas systems will fulfil the expertise needed in the energy system. The electrification of heat and transport will require a transition that needs to be achieved in a coordinated way, hence an FSO with roles in both electricity and gas will help with this transition. Nevertheless, we would like to highlight that as we move towards a more electrified, low-carbon energy system, the roles in gas may become progressively less important. We would also note that there will be greater interaction between the electricity and gas networks as the former is used to produce green hydrogen (from electrolysis of water) for the latter.

**Question 4: Do you agree that a Future System Operator should be entirely separate from National Grid plc?**

Yes, we think that the FSO must be entirely separate from National Grid. It should also be strongly independent, without political interference and influence from other energy interests. We think that government direction should be used to oversee strategic functions, especially to align obligations with government policies such as net zero; however, it should not be used for short term operational influence that could affect the work efficiency of the FSO.

**Question 5: What issues are there with existing institutional arrangements in the UK energy system in relation to system-wide decision-making and planning?**

Today, the existing institutional arrangements in the UK energy system make it very difficult to meet the operability challenges of a low carbon energy system. Current governance arrangements mean that distribution networks, the SO and other parties such as Ofgem do not coordinate as effectively as they should. This makes it more difficult to achieve the best outcomes for the system as a whole. The current system-wide decision-making and planning lacks the coordination and analysis to accommodate the level of flexibility and low carbon technologies required. Signals from the existing market framework are unlikely to bring forward the level of flexibility and renewable deployment required to achieve net zero at lowest cost.

The 2020 *Energy White Paper*<sup>1</sup> states that the electricity system of the future is expected to include generation from many smaller and less predictable sources, alongside storage solutions aided by smart digital tech. This system is expected to be decentralised and interconnected, as well as empowering customers to participate (a shift from consumers to 'prosumers'). This means that the electricity system of the future will be much more complex, so the decision-making process needs to be responsive and agile enough to react to these changes.

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<sup>1</sup> <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future>

Today, Ofgem's policy decision-making lacks strategic ambition when it comes to "net zero at least cost to the consumer". We can see that ongoing regulation does not facilitate the deployment of renewables and flexibility across the system; given the scale of investment in wind generation expected in the coming years to meet the Government's climate targets, this additional cost will ultimately be passed on to consumers. It is our view that strategic decision making for the best value and long-term investment in networks is in conflict with the pressure to reduce costs for consumers in the short term. Network reinforcements that are considered too 'anticipatory' have been put off, and now will have to be implemented with higher costs and disruption, such as circuit reinforcement for the onshore grid around Pelham to support deployment of more offshore wind.

A good example of this outlined by Scottish Renewables<sup>2</sup> is the current Transmission Network Use of System (TNUoS) charging methodology, which is not fit for purpose to meet either the Scottish Government or UK Government's net zero climate targets. The current regime is also damaging to consumers and providing barriers to the deployment of renewable energy across the UK and especially in Scotland, where the charges to generators are higher than elsewhere in the UK.

The achievement of our net zero target will require a significant increase in the pace of change, particularly in the energy sector. The long timeframe of Ofgem's current decision-making processes are incompatible with the speed of change net zero will require. For example, Ofgem launched its *Access and Forward Looking Charges Significant Code Review* in December 2018, and this process has still not been completed. Experience indicates that code reviews take a minimum of five years. As significant progress will have to be made in decarbonising the energy sector by 2030, timeframes of five years to implement regulatory change in an environment where key targets need to be achieved in eight years' time is untenable. As such there needs to be significant changes in how Ofgem code reviews are delivered if it is to have the agility and pace the achievement of net zero will require.

**Question 6: What examples/case studies are you aware of where net zero delivery in one part of the energy system did not adequately account for cross-system impacts or costs?**

An example of the energy system not adequately accounting for cross-system impacts or costs is the current Transmission Network Use of System (TNUoS) charging methodology. TNUoS charges are designed to incentivise locational deployment, but renewables cannot be deployed like this – TNUoS is making renewable projects less deliverable. The way that TNUoS is designed encourages generators to locate close to the demand, which was appropriate for a fossil fuel-based system but now leads to disproportional charges in locations where we need to deploy large amounts of renewable generation.

The renewables industry has led rapid cost reduction over the last decade, with developers reducing the costs at every stage from finance and procurement to design and delivery. However, TNUoS is a cost that developers cannot control. For projects in Scotland, this means that as the cost of a unit of renewable electricity has come down, the proportion of that cost represented by TNUoS has gone up significantly. This is in combination with a predicted substantial rise in transmission charges over the next five years, with the differential between

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<sup>2</sup> <https://www.scottishrenewables.com/publications/861-tnuos-key-points-and-explainer>

northern and southern projects also amplifying. According to a recent report by SSEN Transmission, a wind farm in the north of Scotland currently pays £5.50 per unit of energy as part of the locational TNUoS charges compared to an equivalent wind farm in Wales getting paid £2.80 per unit<sup>3</sup>. This increased cost that TNUoS imposes makes Scottish projects less competitive, encouraging generators to install projects in the south of the UK without considering where the best renewable resources are located to deliver the lowest cost pathway to achieving net zero. This system does not reflect the need for future inclusion of smart, decentralised generation assets. It also ignores the very real planning constraints in England that mean that they deployment of onshore wind project in England is highly unlikely.

A recent report by RIDG<sup>4</sup> showed that the UK has among the highest locational charges in Europe; indeed, it is one of the few countries that charges a locational element for transmission charges. This places UK generators in Scotland at a disadvantage to European generators who face lower transmission costs. It could also increase reliance on interconnectors for security of supply. TNUoS volatility increases the cost of capital of projects and given the scale of investment in wind generation expected in the next years, this additional cost will ultimately be placed onto energy consumers to pay.

Along with amplified locational signals, volatile and unpredictable TNUoS charges are also harming renewable investment. Research conducted by SSEN Transmission<sup>5</sup> found that:

- Generators see swings in their TNUoS charges typically over 50% up or down each year.
- Charges are unpredictable – using National Grid's own data, the average forecast error under-estimated the actual charge by one third.

This volatility is in sharp contrast to the total revenue allowed of the Transmission Owners (TOs) that TNUoS charges are set to recover. The cumulative allowed revenue of NGET, SPEN and SSEN Transmission has been stable, within 5% of £2.5bn, over the past five years. Investors need cost certainty and clear, forecastable TNUoS when planning and delivering long-term investments at lowest cost to the UK consumer. We also note that price volatility is a significant challenge for operational sites, where projects have been built and financed at a specific point in time based on the best view of TNUoS. These projects cannot react to changes in locational signals and therefore volatility in TNUoS costs simply adds risk to the projects. Volatility and unpredictability are not unique to Scotland but experienced by all generators regardless of technology or location. This uncertainty leads to increasing risk margins for developers, ultimately increasing costs that will be passed on to consumers. A caveat to this is that any changes should not be detrimental to projects that have invested under the current regime; we would support grandfathering of existing projects.

## Part 2 – what should a FSO do?

### Question 7: Where should government focus in our efforts to improve systems thinking

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<sup>3</sup> <https://www.ssen-transmission.co.uk/news-views/articles/2021/2/ssen-transmission-calls-for-reform-of-unfair-and-volatile-charging-regime/>

<sup>4</sup> [https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/210524\\_tnuos\\_paper\\_final\\_for.pdf](https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/210524_tnuos_paper_final_for.pdf)

<sup>5</sup> <https://www.ssen-transmission.co.uk/information-centre/tnuos/>

### **and coordination across the energy system?**

Government should focus efforts on **developing an economically efficient transition to net-zero**. This must be a long-term approach with strategic ambition where the renewable deployment must be aligned with the Climate Change Committee (CCC) views. This vision must also be integrated by institutions such as Ofgem, National Grid and the FSO who also need to work in coordination to achieve the deliveries that net zero requires. As described later in question 15, this will require amending Ofgem's remit to align it more closely with the Government's net zero targets.

Other efforts should focus on **price signals to incentivise electricity assets to locate efficiently in the whole system**, appropriately balancing network costs with renewable resources and low cost generation. Current network costs are not passed on in a way that incentivises the optimal low-carbon technologies and flexible behaviour among network users. If it is true that Ofgem aims to address this issue in the ongoing network charging reforms, we would like to note that the reforms proposed lacked analysis on the renewable resource system planning, which become significantly more important as we move toward a low-carbon energy system. For example, in the network charging reform, we would have liked to see that the analysis includes factors such as strength of locational signal, location allocation of capacity, the benefits of a diverse mix of generation, planning regimes across the country, the impact on repowering decisions and increase risk profile for developers. These are variables that for a fossil fuel-based energy system were not relevant, but for a renewable-based system, become essential as ignoring any of them could constrain renewable energy deployment.

We would like to highlight that the **network charging reform** is a priority for our industry. The significant code review was launched in 2018 and the process is still ongoing, generating uncertainty for developers. The recent *Access and Forward-Looking Charges Significant Code Review (SCR): Minded-to position consultation*, proposed a possible review of TNUoS, which may require another SCR, but it is unclear if this will happen and when. The timeline that this reform could take creates ongoing uncertainty for developers and their investors, putting at risk the opportunity to deliver net zero at least cost.

Finally, another important priority is **electricity market reform**. In the 2020 *Energy White Paper*, government recognised that the electricity market needs to incentivise the right behaviours from generators and offer value for money to consumers. The document stated that the market needs to incentivise both significant levels of new investment and efficient operation, in a system which mixes existing generation with increasing levels of renewables and the flexible technologies which complement them. We strongly agree with this statement and believe that this is a priority area that government should focus on.

### **Question 8: Do you agree that the FSO should undertake all the existing roles and functions of NGESO? If not, please explain why.**

Yes, we think that it would be important for the FSO to undertake all the existing roles and functions of NGESO, retaining existing expertise and safeguarding current jobs. However, the outcomes of the FSO are expected to go beyond the current functions of NGESO. We expect that the FSO could look ahead of the energy planning system and take into account the energy system as a whole, which must include all the variables that a flexible and low-carbon energy system will need, something that we haven't seen performed by NGESO so far. We also

expect the FSO to be innovative and work in coordination with other parties across the energy system.

**Questions 9 & 10: Do you agree there is a case for the FSO to undertake the long-term strategic functions outlined in Option 1? Please elaborate and provide any views on the functions we have outlined in Option 1.**

**&**

**Do you agree that there is not currently a case for the FSO to undertake all GSO roles and functions, including real-time gas system operation, as outlined in Option 2? If you do not agree, please explain why.**

We agree that there is a case for the FSO to undertake strategic network planning, long-term forecasting, and market strategy functions, as outlined in Option 1. We think that there is a case to keep these functions as part of the transition toward a low carbon energy system, but we would like to note that considering that most of these functions refer to gas, we would expect they become less important with time. In the 6<sup>th</sup> Carbon Budget<sup>6</sup> the Climate Change Committee (CCC) recommends the phase out of unabated gas by 2035. Therefore, unless there is a quick deployment of CCUS in the next 10 years, our view is that most energy generation will come from renewables, technologies that are proven and ready to increase capacity generation into the energy mix.

We would like to note that if, as expected, we move towards an energy system with more green hydrogen, we will need an understanding of where it will be produced and transported. In this case, electricity and gas transmission and distribution grids need to work together in an efficient way, and an FSO would be ideal for coordinating this.

**Question 11: Do you have views on the proposal for an advisory role? What organisations do you consider would benefit from the provision of advice by the FSO? Who should bear the costs of providing that advice?**

We think that the FSO should definitely have an advisory role that could benefit Ofgem, government, DNOs and it could also be extended to local authorities. However, there would need to be significant capability building to achieve this, and there are questions over who should bear the cost.

**Question 12: Do you have any views on the other areas where we are considering new and enhanced roles and functions for the FSO (outlined in section 3.2)?**

Section 3.2 of the consultation proposes some enhanced functions in areas that are mostly welcome. This includes **hydrogen, CCUS, heat and transport decarbonisation, energy data and engineering standards and energy code development**. The document states that legislation will provide the remit for the FSO, potentially through setting out high-level roles for the FSO. We believe that legislation will be an important instrument to provide direction and alignment with net zero.

The new and enhanced roles from the consultation include advisory aspects, providing policy makers and wider stakeholders with technical advice, recommendations, and analysis across a range of issues, including decarbonisation. Additionally, it is expected that primary legislation

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<sup>6</sup> <https://www.theccc.org.uk/publication/sixth-carbon-budget/>



could be introduced to impose a duty on the FSO to provide advice or information when requested by UK Government, Ofgem, or other organisations. We welcome that primary legislation could be used to impose a duty on the FSO to provide high level advice to those organisations. We think that the advisory role of the FSO will be one of the most important roles of this new entity.

Section 3.2.3 of the consultation provides some examples of “potential” FSO functions in whole system planning and network development. We agree with the direction shown by some of those examples, but they fail to fully take into account that the future energy system will be driven by a renewable-based energy system. We would like to highlight the functions that the FSO should undertake, which are the ones we believe are needed to drive net zero.

- a) **High-level network design and coordinated planning:** We agree with this proposed function and believe that is greatly needed for the future network planning. This will be in conjuncture with other key players, such as the Crown Estate and BEIS. To date system design has been on an *ad hoc* basis, but using our knowledge of renewables, we can understand where they will be deployed in the future and take low-risk anticipatory investments that will provide value in the longer-term. This is particularly relevant to the development of an enduring regime for offshore network design and anticipatory investment.
- b) **Engineering standards and code development:** The current open governance regime has many benefits, but with the growing number of players in the market, it has become too unwieldy and slow. A more strategic management of code governance could be led by the FSO.
- c) **Providing technical advice and evidence-based recommendations to Ofgem, government and the CCC.** We think that this proposed function is very important once point a) and point b) are considered in any technical advice.
- d) **Staying abreast of new technologies and identifying areas where new technology is needed (such as identifying options for hydrogen storage locations).** We agree with this proposed point and believe that is an area of analysis that Ofgem have missed in its decision making in the last few years.
- e) **Critically evaluating investment proposals as part of the price control process.** We agree with this proposed function, assuming it does not delay sign-off.
- f) **Enhanced electricity network planning and Network Options Assessment (NOA) process,** such as critically evaluating and challenging the full range of possible options for addressing system needs (commercial non-network alternatives) and developing an overall electricity transmission network design. We agree with this proposed function.

Section 3.2.4, 3.2.5, 3.2.6 and 3.2.7 of the consultation provide an insight of the new and enhanced functions that the FSO should undertake around driving competition in energy networks, energy market design, coordination with distribution networks, heat and transport decarbonisation, data, system operability, engineering standards and energy code development. We think that all these roles are needed to drive net zero, so they are mostly

welcome.

### Part 3 – FSO organisational model

**Question 13: What are your views on our proposed characteristics and attributes of a future system operator and how the models presented would deliver against them? Are there other characteristics or attributes that we have not yet considered?**

We agree with all the characteristics proposed in the consultation: technically expert, operationally excellent, accountable to consumers and the public, independently minded, and resilient. However, we think that the following characteristics are missing:

- *Technical expertise* with an in-depth understanding of driving a complex flexible and renewable-based energy system in the planning network and in the system as a whole.
- *Commercially aware*, with an understanding of how decisions made can impact on investment and cost of capital
- It needs to make *effective use of data* and embrace digitalisation

**Question 14: Are we considering the right organisation models for the FSO? And why?**

Section 4.3 of the consultation proposes the following two organisational models:

- a standalone privately owned model, independent of energy sector interests; or
- a highly independent corporate body model, classified within the public sector, but with operational independence from government.

We believe that to avoid conflict of interest, a highly independent corporate body model, classified within the public sector, but with operational independence from government is more appropriate. A public model would help with data transparency and would also help to impose any legally binding duty related with net zero through a Strategy and Policy Statement (SPS), which would be much more difficult to achieve with a private model. Facing a legal binding duty from the SPS would help to work in coordination with other entities such as Ofgem, which will also face legally binding duties from the SPS. Coordination between entities is important, as it is one of the main issues that the energy system has had in recent years.

**Question 15: Are we considering the right elements for the FSO's regulatory and accountability frameworks? And why?**

We agree with the regulatory framework proposed in section 4.3.1 of the consultation. The new FSO, either public or private, should incorporate legislation, any designated SPS, licences and codes, and funding through network charges.

We think that the proposed objectives of the FSO also seem sensible. These include:

- operating the electricity system to maintain a secure, reliable supply to consumers
- taking a whole system perspective to ensure progress toward net zero
- reducing costs for current and future consumers by encouraging the development of an efficient system; and
- protecting the interests of existing and future consumers.

We believe that the fact the FSO must look at the system as a whole to ensure progress toward net zero will help government and Ofgem to make more informed decisions about the whole system cost of different technology choices and will enable the development of a more



co-ordinated energy system.

We welcome the proposal that for a public model, the SPS will be able to provide operating context and strategic focus, which wouldn't be the case in a private model. We think that imposing legally binding duties on the FSO will be important to align responsibilities with net zero and it will also help to coordinate with Ofgem, which will also face legally binding duties coming from the SPS. We also agree with ensuring that it should keep under review relevant government policy initiatives or other developments in the energy sector that are likely to impact on the FSO's work including those which occur or emerge between the reviews of a designated SPS.

Additionally, we strongly support a statutory duty for Ofgem to deliver net zero emissions (at the lowest cost route), that can be challenged in court if necessary. Evidence shows that net zero is not a conflict with consumer costs, if managed properly.

**Question 16: Do you have views on the level of shareholding or control involving other 'energy interests' and the FSO at which a conflict of interest would become a concern?**

Not applicable - this applies for a private model.

**Question 17: Are we considering the right implications of our proposals for Elexon and Xoserve?**

No comments

## **Part 4 – FSO implementation**

**Question 18: What is your view on the preferred implementation approach? Please explain why.**

We agree with the phased implementation approach. This would help with the transition from NGESO to FSO in a more coordinated way. It is our view that keeping existing capability and functions of the NGESO, followed by adding new roles and functions as discussed in question 12 will help with coordination between the existing energy system and the flexible and low carbon energy system of the future. Upskilling existing employees, as well as building additional capacity, will need to be considered in order for the FSO to satisfy these new roles and functions.

We would like to note that upcoming system governance structure and the evolution of the System Operator role should not in any way put on hold the development of balancing and flexibility markets as this would damage the deployment of renewables and flexibility at all scales and the UK's ability to meet net zero.

**Question 19: Based on the areas where we are considering new and enhanced roles and functions for the FSO, which of these should be prioritised for development? Please explain why.**

We think that whole-system **planning and network development** should be prioritised, and this should include points a) to f) addressed in our answer to question 12. One of the main issues we have identified was the system-wide decision making and planning, which currently lacks coordination and analysis to accommodate the level of flexibility and low carbon

technologies required to meet our climate targets. Therefore, we think there is a strong case to prioritise this area.

Another area that we think should be prioritised is the **advisory role** of the FSO. The whole system planning and network development is quite linked with policy decision making that is carried out by Ofgem, thus the advisory role will be an important input to help Ofgem to take more informed policy decisions.

We also think that **heat and transport decarbonisation** is an equally important priority, but the outcomes of this are linked with the 2 areas mentioned previously. This is mainly because heat and transport will become more electrified to be decarbonised, hence these sectors will require significant deployment of low carbon technologies (such as EVs and heat pumps), deployment that is currently constrained due to issues in the planning and network development.

**Question 20: What do you believe are the risks to implementation? How can these be mitigated?**

We would like to raise our concern with respect to the time that a phased implementation could take. The impact assessment shows that benefits resulting from the FSO would only start in 2026, which creates increased uncertainty in system governance structure between now and 2026.

Today, energy firms already face uncertainty around ongoing network reforms that could have significant impact on renewable deployment, therefore adding more uncertainty would only constrain more deployment. The Government has renewable targets that need to be met by 2030 and it is unclear if a phased implementation that will start in 2026 will help with the deployment required by 2030. A clear view on the impact of the FSO on balancing services development is important; market participants need certainty that ongoing reform will continue to deliver benefits.

**Question 21: Do you have any comments on potential implications of implementation for you, your organisation, or other stakeholders?**

No comments

## **Part 5 – FSO impact assessment**

**Question 22: What is your view on the position there are likely to be cost savings across the energy system from an increased “whole system” view, as described in paragraphs 47-52 of the IA? If so, is the potential magnitude of savings illustrated fairly in the IA? If not, why not?**

We strongly agree on the position that there are likely to be cost savings across the energy system from an increased “whole system view”. We welcome that in the impact assessment (IA), the model includes the input from the CCC in the 6<sup>th</sup> Carbon Budget and that it assumes that the electricity network will increase in size up to 2050, while the natural gas network is expected to decline across all scenarios considered.

The 6<sup>th</sup> Carbon Budget anticipated that an energy system driven by low carbon technologies will generate cost savings in the long term, particularly associated with operational cost

savings in buildings, surface transport, and electricity supply. With a simple analysis of economy of scale, it is predictable that if the electricity network increases in size, costs will be reduced due to large deployment of low carbon technologies and learning by doing effect.

Additionally, assuming that the energy system of the future will be smart and with flexible technologies balancing the high volume of intermittent technologies, it would be expected that the system as whole would be more efficient. The recent *Smart and Flexibility Plan 2021*<sup>7</sup> released by BEIS shows that a smarter and flexible system is an opportunity and will reduce cost by up to £10bn a year by 2050, a statement that was confirmed with a previous report<sup>8</sup> from the Imperial College London and Carbon Trust.

**Question 23: What is your view on the conclusion that policy intervention is likely to increase the benefits of onshore electricity network competition, as described in paragraphs 53-59 of the IA? If you agree, is the potential magnitude of savings illustrated fairly in the IA? If not, why not?**

No comments

**Question 24: Do you think that the impact assessment has identified and considered the key costs and benefits of policy intervention? If not, can you provide details on other impacts that have not been considered?**

No comments

**Question 25: Do you think that the distribution of impacts is fairly represented, with impacted groups correctly identified? Outlined in table 5 of the IA.**

Yes, we think that table 5 shows a fair representation about the distribution of impacts.

**Question 26: We invite respondents' views on whether the proposals for energy system governance reform may have a different impact on people who have a protected characteristic (age, disability, gender re-assignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or sexual orientation), in different ways from people who don't have that characteristic.**

No comments

**Question 27: Please provide any evidence that may be useful to assist with our analysis of policy impacts.**

No comments

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<sup>7</sup> <https://www.gov.uk/government/publications/transitioning-to-a-net-zero-energy-system-smart-systems-and-flexibility-plan-2021>

<sup>8</sup> [An analysis of electricity flexibility for Great Britain.pdf \(publishing.service.gov.uk\)](#)